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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/640,963	08/16/2000	Aki Shohara	020669-00200US	3410

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EXAMINER

TRAN, KHANH C

ART UNIT PAPER NUMBER

2631

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/640,963

Applicant(s)

SHOHARA, AKI

Examiner

Khanh Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-26, 43 and 44 is/are allowed.
- 6) ☒ Claim(s) 27-31 and 34-42 is/are rejected.
- 7) ☒ Claim(s) 32, 33 and 45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. The Amendment filed on 08/20/2004 has been entered. Claims 1-45 are pending in this Office action.

Response to Arguments

2. Applicant's arguments, see page 12 of the Remarks, filed on 08/20/2004, with respect to the rejection(s) of claim(s) 1-18 under 112 U.S.C, first paragraph, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

3. Applicant's arguments, see pages 12-15 of the Remarks, filed on 08/20/2004, with respect to the rejection(s) of claim(s) 21-32, and 34-42 under 35 U.S.C 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Abe et al. U.S. 6,693,889 B1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 27, 31, 34-35, 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. U.S. 6,693,889 B1.

Regarding claim 27, in column 7 line 50 through column 8 line 20, figure 2A shows an internal structure of a multiple puncturing pattern generator wherein a reference matrix (shown in figure 2B) is used for generating a plurality of puncturing patterns, the reference matrix comprising a series of bits arranged in rows and column. The reference matrix is saved in the memory. As also discussed in the background of the invention, column 1, lines 25-57, a series of information data to be transmitted is punctured in order to reduce an amount of communication traffic in a transmission pathway. Figure 8B illustrates how the puncturing process is carried out. In view of that, the puncture mask is a series of bits, each being associated with an encoded data bit for determining whether the encoded data bit is to be transmitted.

Abe et al. does not expressly disclose the reference matrix being a compressed puncture mask. However, see figure 2A, the matrix converter 202 outputs a plurality of puncturing patterns by converting a row, a column or matrix elements from the reference matrix. In view of that, it would have been obvious for one of ordinary skill in the art at the time the invention was made that the reference matrix is representative of compressed punctured mask. Further evidence in the teachings discloses the system is able to save a memory capacity since the system stores only one matrix as a reference for generating a plurality of puncturing patterns, see column 8, lines 5-11.

The act of generating a plurality of puncturing patterns from the reference matrix corresponds to uncompress the puncturing patterns. The puncturing pattern taught in Abe et al. invention corresponds to the claimed puncture mask.

Regarding claim 31, referring to figure 2A, the reference matrix 201a can be used to generate two puncturing patterns A and B. Figure 2B shows the reference matrix 201a can be used to generate puncturing patterns A B and C. In view of that, the reference matrix can be used to generate a plurality of puncturing patterns. The claimed limitations "at least 30 puncture masks" are within the scope of Abe et al. teachings.

Regarding claim 34, the multiple puncturing pattern generator shown in figure 2A is part of the transmitter 100 shown in figure 1A. Abe et al. does not teach the transmitter is implemented on an integrated circuit. Nevertheless, it would have been obvious for one of ordinary skill in the art at the time the invention was made that the transmitter 100 can be implemented on an integrated circuit. The modification is obvious because it is well known in the art of integrated circuit, circuit components are implemented on an integrated circuit.

Regarding claim 35, the transmission device 100 shown in figure 1 is for wireless communications.

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Regarding claim 40, figure 1A illustrates the transmission device 100 and a receiving device 110. However, the transmission device 100 also includes a receiving side similar to the receiving device 110 as well known in the art. The time-diversity receiver / demodulator 112 inherently includes a portion of a mixer.

Regarding claim 41, the time-diversity modulator / transmitter 105 inherently includes a portion of a mixer.

Regarding claim 42, the time-diversity modulator / transmitter 105 inherently includes a VCO.

5. Claims 28-30, 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. U.S. 6,693,889 B1 as applied to claim 1 above, and further in view of Li U.S. Patent 6,385,752 B1.

Regarding claim 28, Abe et al. invention does not teach the decompressed puncture mask is at least 1000 bits as claimed in the application claim.

Li invention is directed to an improved method of puncturing a convolutionally encoded bit stream provided for specific examples consisting of PCS-4 and PCS-5, these being encoding schemes provided in accordance with the EDGE standard. For PCS-5 in one case, the blocks to be punctured have a size of $L=2422$, and said blocks need to be punctured such that $M=1384$ bits remain. As appreciated by one of ordinary skill in the art that the length of the puncture mask is more than 1000 bits.

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Abe et al. and Li et al. teachings are in the same field of endeavor. Li et al. teachings apply to various industry standards. Because Abe et al. does not limit the number of bits in a puncturing pattern, it would have been obvious for one of ordinary skill in the art at the time the invention was made that the reference matrix can be generated such that the matrix represents puncture patterns of more than 1000 bits as taught by Li et al. for applications to various standard such as PCS-4 and PCS-5.

Regarding claim 29, claim 29 is rejected on the same ground as for claim 28 because of similar scope. Furthermore, the reference matrix can be modified to represent puncture patterns of more than 2000 bits.

Regarding claim 30, Li invention applies to encoding schemes in accordance with existing EDGE standards for PCS-4 and PCS-5, which corresponds to the claimed two communication standards. Hence, the puncturing patterns are for the two communication standards as appreciated by one of ordinary skill in the art.

Regarding claim 36, claim 36 is rejected on the same ground as for claim 28 because of similar scope.

Regarding claim 37, claim 37 is rejected on the same ground as for claim 29 because of similar scope.

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Regarding claim 38, claim 38 is rejected on the same ground as for claim 30 because of similar scope.

Regarding claim 39, claim 39 is rejected on the same ground as for claim 31 because of similar scope.

Allowable Subject Matter

6. Claims 1-7 are allowed.

Regarding claim 1, claim is directed to a method of compressing puncture mask information. Claim is allowed over prior art of record because the cited prior art of record, either singularly or in combination, cannot teach or suggest the claimed method as set forth in the claim.

7. Claims 8-18 are allowed.

Regarding claim 8, claim is directed to a method of decompressing and using a puncture mask. Claim is allowed over prior art of record because the cited prior art of record, either singularly or in combination, cannot teach or suggest the claimed method as set forth in the claim.

8. Claims 19-20 are allowed.

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Regarding claim 19, claim is directed to a code puncture apparatus. Claim is allowed over prior art of record because the cited prior art of record, either singularly or in combination, cannot teach or suggest the claimed code puncture apparatus comprising a run length decoder, a differential operator, and a puncture mask register as set forth in the claim.

9. Claims 21-26, 43-44 are allowed.

Regarding claim 21, claim is directed to a method of electronically storing puncture masks. Claim is allowed over prior art of record because the cited prior art of record, either singularly or in combination, cannot teach or suggest the claimed method comprising compressing a puncture as set forth in the claim.

10. Claims 32-33, 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Phancong Tran
Examiner

01/07/2005

KHANH TRAN